SMALL LIGHTNING DISCHARGES BETWEEN THE RAINDROPS.

Mr. Fred. M. Taylor, Postmaster, Titusville, Fla., reports that on September 17, during a thundershower shortly after sunset, each electric discharge was accompanied by small typical strokes of only a few inches in length between neighboring rain drops. These were synchronous with the main discharge and when they struck the hands or face produced a sharp stinging sensation.

OLD WEATHER RECORD AT FAIRMOUNT, ONONDAGA COUNTY. N. Y.

We desire to again call attention to the record of temperature kept at Fairmount, Onondaga County, N. Y., since 1800. This record is referred to on page 296 of the Transactions of the New York State Agricultural Society for the year 1859. If any one can discover what has become of this record and see that it is made accessible to meteorologists, he will be doing a good work. Some extracts referring to this record were published in the MONTHLY WEATHER REVIEW for September, 1897, page 398.

HURRICANE ON SEPTEMBER 11 IN THE BAHAMAS.

Mr. Arthur S. Haigh, living at Cat Cay, in the Bahamas, latitude 25° 33′ north; longitude 79° 19′ west, writes as follows:

A hurricane passed here on September 11, and there being no weather station within 60 miles or so, a few details may be of interest to the Weather Bureau. On the night of the 10th the wind was squally from east, with some rain; barometer 29.80 at 10 p. m. At 6 a. m. on the 11th barometer was at 29.50; wind a full gale from northeast, which increased to hurricane force by 8:30 a. m.; barometer 29.20 and falling rapidly. From 10 to 10:30 a. m. barometer stood at 28.82; between 10:30 and 11 a. m. the wind dropped a good deal and went round by north to southwest, from which quarter shortly after 11 a. m. it blew harder than ever; barometer slowly rising. After 1 p. m. the wind gradually decreased; by 4 p. m. barometer had risen to 29.50 and at 6 p. m. to 29.80—storm practically over.

Rainfall for twenty-four hours ending 6 p. m. September 11 was 0.84 inch. The barometer had been about two tenths below normal for several days, which is not unusual here at this time of year, but beyond that I had no warning.

THE WEATHER OF THE MONTH.

By Mr. W. B. STOCKMAN, District Forecaster, in charge of Division of Meteorological Records.

PRESSURE.

The distribution of mean atmospheric pressure is graphically shown on Chart IV and the average values and departures from normal are shown in Tables I and VI.

The mean barometric pressure was above 30.00 inches from the central parts of Texas, Oklahoma, and Kansas, southeastern Nebraska, western Iowa, northwestern Wisconsin, and central upper Michigan eastward to the Atlantic Ocean, with the crest over central North Carolina, Virginia, West Virginia, District of Columbia, Maryland, Delaware, and southern New Jersey, in which region the mean pressure was from 30.15 to 30.19 inches.

Over western New Mexico, Arizona, and eastern and the central valleys of California the mean pressure was 29.90 inches or lower, with a minimum mean monthly of 29.80 inches at Yuma.

The mean pressure was below the normal in Minnesota generally, eastern and southern South Dakota, Nebraska, western Kansas, western Texas, southern Wyoming, Colorado, New Mexico, northeastern Arizona, Utah, central Nevada, and north-central California; elsewhere it was above the normal.

In the area of minus departures the change in no instance equaled —.05 inch, while in the greater portion of the regions of plus departures the changes ranged from +.05 to +.13 inch, the maximum changes occurring over western Virginia and eastern West Virginia.

The pressure increased over August, 1903, except in southern Florida, northwestern upper Michigan, northern Minnesota, eastern North Dakota, and north-central Montana.

The minus departures were very slight, not exceeding —.02 inch. Generally the plus departures were very decided, with changes of +.10 inch to +.15 inch over portions of the northern and middle Plateau regions, and from northeastern Arkansas eastward to the Atlantic Ocean, and from eastern Missouri northeastward over the lower Lake region and thence eastward over southern New England to the Atlantic. Over eastern Kentucky, the southern parts of Ohio, Pennsylvania, and New Jersey, the District of Columbia, Maryland, Delaware, Virginia, West Virginia, and northern North Carolina the changes ranged from +.15 to +.20 inch, with the greatest change over northeastern West Virginia.

TEMPERATURE OF THE AIR.

The distribution of maximum, minimum, and average surface temperatures is graphically shown by the lines on Chart VI.

The temperature was above the normal in New England, the Ohio Valley and Tennessee, lower Lake region, and the middle and south Pacific districts, and below the normal in all other districts.

As will be seen by the subjoined table, the plus departures exceeded +1.0° in but one district, while the minus departures were —1.0°, or more, in ten districts; —2.0°, or more, in four districts; —3.0°, or more, in two districts, and —4.0°, or more, in one district.

The average temperatures for the several geographic districts and the departures from the normal values are shown in the following table:

Average temperatures and departures from normal.

Districts.	Number of stations.	Average temperatures for the current month.	Departures for the current month.	Accumulated departures since January 1.	Average departures since January 1.
		°	°	°	°
New England	8	61.2	+ 0.5	+ 4.9	+ 0.5
Middle Atlantic	12	66.7	— 0.3	+ 7.5	+ 0.8
South Atlantic	10	72.5	— 0.8	+ 3.9	+ 0.4
Florida Peninsula*	8	78.9	— 0.2	+ 5.8	+ 0.6
East Gulf	9	74.4	— 1.0	— 7.7	— 0.9
West Gulf	7	75.2	— 0.8	—11.0	— 1.2
Ohio Valley and Tennessee	11	69.6	+ 0.8	+ 4.0	+ 0.4
Lower Lake	8	64.4	+ 1.2	+ 8.9	+ 1.0
Upper Lake	10	58.9	— 0.3	+10.6	+ 1.2
North Dakota*	8	52.2	— 4.9	— 2.9	— 0.3
Upper Mississippi Valley	11	64.0	— 1.0	+ 4.0	+ 0.4
Missouri Valley	11	62.6	— 2.6	— 0.7	— 0.1
Northern Slope	7	55.4	— 2.8	— 3.9	— 0.4
Middle Slope	6	66.0	— 1.7	— 6.6	— 0.7
Southern Slope*	6	70.9	— 1.4	—10.4	— 1.2
Southern Plateau*	13	67.2	— 1.9	—13.2	— 1.5
Middle Plateau*	8	57.8	— 3.4	—24.0	— 2.7
Northern Plateau*	12	55.7	— 1.6	+ 0.1	0.0
North Pacific	7	57.0	— 0.1	— 3.6	— 0.4
Middle Pacific	5	63.4	+ 0.5	— 8.1	— 0.9
South Pacific	4	68.7	+ 0.4	— 5.1	— 0.6

* Regular Weather Bureau and selected voluntary stations.

In Canada.—Prof. R. F. Stupart says:

The mean temperature of the month was lower than the average over the mainland of British Columbia, throughout the Northwest Territories, in Manitoba, and in Ontario north of the Great Lakes, the largest negative departure, about 6°, being in British Columbia and Saskatchewan. In the Territories, in only three of the past twenty years has the September mean been as low as during the month just closed. From Lake Huron eastward over Ontario, Quebec, and the Maritime Provinces, the mean was very nearly average, but a positive departure of about 1° was fairly general.

East of the Mississippi Valley, except in New York, about central Lake Ontario, the departures, whether plus or minus,

did not equal 2.0°, while over portions of the Plateau and slope regions, North Dakota, and the upper Missouri Valley they ranged from —2.0° to —6.4°, the region of maximum departures overlying central Wyoming and the western portions of the Dakotas, the greatest departure, —6.4°, being reported from Rapid City, S. Dak.

Maximum temperatures of 90°, or higher, were reported from the southern portions of the South Atlantic States, the Gulf States, Ohio Valley and Tennessee, western portion of the lower Lake region, southern portions of the upper Mississippi and Missouri valleys, portions of the middle and northern slope and northern Plateau regions, the middle and southern Plateau and southern slope regions, and California, except at some coast stations. Maximum temperatures of 100°, or higher, occurred in northeastern Alabama, southwestern Oklahoma, northwestern and west-central Texas, southwestern New Mexico, western Arizona, extreme southern Nevada, and the valleys of southeastern California; and maximum temperatures of 110° to 116° in southeastern California, extreme southern Nevada, and western Arizona.

Freezing temperatures occurred in portions of New England, New York, Pennsylvania, the Lake region, upper Mississippi and upper Missouri valleys, North Dakota, and the slope and Plateau regions.

PRECIPITATION.

The distribution of total monthly precipitation is shown on Chart III.

The precipitation was normal in the northern Plateau, and south Pacific districts; below the normal in the Atlantic, and Gulf States, Ohio Valley and Tennessee, lower Lake region, the middle slope, and middle Pacific districts, and above the normal in the remaining districts.

In central and southern Florida, except in the extreme southern portion, and in east central Georgia, the precipitation was above the normal, and markedly so on the southeast coast of Florida where it amounted to + 6.3 inches at Jupiter. Marked excesses in precipitation also occurred in the valleys of the upper Mississippi, and Red River of the North, parts of the central Mississippi Valley, in north-central Texas, where it amounted to + 6.2 inches at Abilene, and in western Texas, and central and eastern Arizona, where the departures ranged from + 2.4 inches at El Paso, to + 3.8 inches at Flagstaff. The greatest deficiencies in precipitation were reported from western Kentucky, Tennessee, western Alabama, eastern Mississippi, the western parts of Louisiana and Arkansas, the Texas coast, extreme southeastern Virginia, District of Columbia, Maryland, central Pennsylvania, and New York, except the extreme southeastern portion, where they ranged from —2.0 inches to —4.3 inches.

SNOW.

Snow occurred at most of the higher stations of the Rocky Mountain region from Colorado northward to the British Possessions, during the passage of the storms from the 11th to 15th, over that region, and extended into the lower levels of the western portions of the Dakotas, and northwestern Nebraska. Snow also occurred over the Upper Michigan Peninsula, and at scattered points in the northern parts of New York and New England.

HAIL.

The following are the dates on which hail fell in the respective States:

Arizona, 5, 8, 20, 23, 24, 28, 30. Arkansas, 15, California, 12, 30. Colorado, 6, 11, 24, 28, 29. Connecticut, 5, 27. Florida, 2, 18. Georgia, 2, 3. Idaho, 7, 8, 12, 13, 14. Illinois, 14, 17. Indiana, 5. Iowa, 11, 13, 17. Kansas, 8, 9, 11, 26. Louisiana, 16. Maine, 4, 5, 7, 27. Maryland, 27. Massachusetts, 5, 27. Michigan, 2, 9, 17, 18, 24, 27. Minnesota, 1, 2, 3, 8, 12, 13, 14, 15. Mississippi, 16. Missouri, 8, 9, 26. Montana, 5, 7, 10, 25. Nebraska, 7, 9, 11, 13. New Hampshire, 5, 7, 27, 29. New Jersey, 5, 27. New Mexico, 11, 12, 27, 28. New York, 4, 5, 24, 27, 28. North Carolina, 5. North Dakota, 8. Ohio, 8, 10. Oregon, 10. Pennsylvania, 5, 27. South Dakota, 3, 4, 7, 13, 14. Texas, 14, 16, 24, 30. Utah, 1, 6, 11, 14, 28, 30. Virginia, 27. Washington, 14. Wisconsin, 2, 3, 17. Wyoming, 5, 6, 10, 25, 29.

SLEET.

The following are the dates on which sleet fell in the respective States:

Colorado, 11, 13, 14, 15, 26. Michigan, 16, 17. Minnesota, 13. Montana, 10, 12, 13, 14. North Dakota, 12, 13, 15, 16. South Dakota, 13, 16. Utah, 11, 14. Washington, 14. Wisconsin, 17. Wyoming, 7, 8, 13.

Average precipitation and departure from the normal.

Districts.	Number of stations.	Average.		Departure.	
		Current month.	Percentage of normal.	Current month.	Accumulated since Jan. 1.
		Inches.		*Inches.*	*Inches.*
New England	8	1.57	50	—1.6	—1.2
Middle Atlantic	12	2.05	55	—1.7	0.0
South Atlantic	10	3.48	69	—1.6	—0.8
Florida Peninsula*	8	9.16	118	+1.4	+6.0
East Gulf	9	1.38	37	—2.4	—2.9
West Gulf	7	1.83	45	—2.2	+0.1
Ohio Valley and Tennessee	11	0.89	31	—2.0	—5.0
Lower Lake	8	1.86	63	—1.1	+2.2
Upper Lake	10	3.96	114	+0.5	+1.4
North Dakota*	8	3.08	261	+1.9	—1.4
Upper Mississippi Valley	11	4.45	137	+1.2	+1.6
Missouri Valley	11	3.06	124	+0.6	+3.9
Northern Slope	7	1.50	150	+0.5	+1.1
Middle Slope	6	1.15	66	—0.6	+0.1
Southern Slope*	6	2.68	104	+0.1	—1.2
Southern Plateau*	13	1.72	210	+0.9	+0.9
Middle Plateau*	8	0.97	126	+0.2	—0.2
Northern Plateau*	12	1.04	100	0.0	—3.0
North Pacific	7	3.04	103	+0.1	—6.6
Middle Pacific	5	0.06	8	—0.7	—4.4
South Pacific	4	0.11	100	0.0	+0.4

*Regular Weather Bureau and selected voluntary stations.

In Canada.—Professor Stupart says:

The precipitation was considerably in excess of the average in British Columbia, and in excess to a lesser extent in Manitoba, northern Ontario, Prince Edward Island, and Nova Scotia. In southern Ontario and in Quebec there was a marked deficiency, while in the Northwest Territories the departures from average were not pronounced, and in some localities were positive and in others negative.

SUNSHINE AND CLOUDINESS.

The cloudiness was normal in the Florida Peninsula, below the normal in the Atlantic and Gulf States, Ohio Valley and Tennessee, and the lower Lake and middle Plateau regions, and above the normal in the remaining geographic districts. Some of the departures, both plus and minus, were quite marked.

The percentage of sunshine was 70 per cent or more in southern Kentucky, Tennessee, western Alabama, Mississippi, eastern and central Louisiana, southeastern Texas, the western parts of Arizona and New Mexico, Nevada, and California, except the extreme southwestern and northwestern parts.

The distribution of sunshine is graphically shown on Chart VII, and the numerical values of average daylight cloudiness, both for individual stations and by geographic districts, appear in Table I.

The averages for the various districts, with departures from the normal, are shown in the following table:

Average cloudiness and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England	4.0	— 1.0	Missouri Valley	4.9	+ 0.9
Middle Atlantic	4.0	— 0.8	Northern Slope	4.7	+ 0.7
South Atlantic	4.2	— 0.6	Middle Slope	3.7	+ 0.5
Florida Peninsula	5.5	0.0	Southern Slope	4.2	+ 0.6
East Gulf	2.9	— 1.5	Southern Plateau	3.3	+ 0.7
West Gulf	3.7	— 0.6	Middle Plateau	2.8	+ 0.1
Ohio Valley and Tennessee	3.2	— 1.2	Northern Plateau	4.3	+ 0.2
Lower Lake	4.0	— 0.8	North Pacific	5.5	+ 0.6
Upper Lake	5.6	+ 0.5	Middle Pacific	3.1	+ 0.3
North Dakota	5.5	+ 1.2	South Pacific	3.0	+ 0.5
Upper Mississippi Valley	4.4	+ 0.2			

HUMIDITY.

The relative humidity was normal in the upper Lake and south Pacific districts; below the normal in New England, South Atlantic and Gulf States, Florida Peninsula, Ohio Valley and Tennessee, and the north and middle Pacific districts, and above the normal elsewhere; as a rule, the plus departures were larger than the minus ones, over the several districts, and especially so in North Dakota, and the northern slope district.

The averages by districts appear in the subjoined table:

Average relative humidity and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
	%			%	
New England	79	— 2	Missouri Valley	70	+ 4
Middle Atlantic	79	+ 2	Northern Slope	64	+ 9
South Atlantic	78	— 2	Middle Slope	60	+ 2
Florida Peninsula	79	— 3	Southern Slope	65	+ 5
East Gulf	71	— 5	Southern Plateau	42	+ 3
West Gulf	72	— 2	Middle Plateau	43	+ 5
Ohio Valley and Tennessee	69	— 3	Northern Plateau	55	+ 7
Lower Lake	74	+ 1	North Pacific	78	+ 2
Upper Lake	77	0	Middle Pacific	60	— 5
North Dakota	75	+ 9	South Pacific	66	0
Upper Mississippi Valley	76	+ 4			

ATMOSPHERIC ELECTRICITY.

Numerical statistics relative to auroras and thunderstorms are given in Table IV, which shows the number of stations from which meteorological reports were received, and the number of such stations reporting thunderstorms (T) and auroras (A) in each State and on each day of the month, respectively.

Thunderstorms.—Reports of 3155 thunderstorms were received during the current month as against 2641 in 1902 and 7174 during the preceding month.

The dates on which the number of reports of thunderstorms for the whole country was most numerous were: 27th, 253; 8th and 9th, 236; 5th, 232; 10th, 237.

Reports were most numerous from: Missouri, 333; Iowa, 217; Illinois, 190; Nebraska, 141.

Auroras.—The evenings on which bright moonlight must have interfered with observations of faint auroras are assumed to be the four preceding and following the date of full moon, viz: 2d to 10th.

In Canada: Thunderstorms were reported at St. John, N. B., 5, 28. Halifax, 5, 6. Grand Manan, 5, 28. Yarmouth, 28. Quebec, 4, 10. Montreal, 4, 10, 27. Bissett, 15, 16. Ottawa, 10. Kingston, 4. Toronto, 22. White River, 3, 23. Port Stanley, 4, 8, 9, 10, 13. Saugeen, 9, 10, 27. Parry Sound, 10, 12, 15, 16, 23. Port Arthur, 3, 8, 9. Minnedosa, 19, 20, 23, 29, 30. Qu'Appelle, 6. Medicine Hat, 6. Swift Current, 6. Hamilton, Bermuda, 7.

Auroras were reported from Grand Manan, 20, 22, 23. Yarmouth, 23. Quebec, 19, 22, 29. Montreal, 19, 22. Kingston, 29. Toronto, 4. Port Stanley, 19. Minnedosa, 1, 3. Qu'Appelle, 19. Swift Current, 23. Edmonton, 20, 25. Prince Albert, 29.

WIND.

The maximum wind velocity at each Weather Bureau station for a period of five minutes is given in Table I, which also gives the altitude of Weather Bureau anemometers above ground.

Following are the velocities of 50 miles and over per hour registered during the month:

Maximum wind velocities.

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
Atlantic City, N. J.	16	60	se.	Mount Tamalpais, Cal.	12	75	nw.
Buffalo, N. Y.	27	60	w.	New Haven, Conn	16	60	s.
Cape Henry, Va.	15	54	nw.	New York, N. Y.	16	63	e.
Chicago, Ill	12	51	s.	Do	17	65	nw.
Columbus, Ohio	10	60	w.	North Head, Wash	11	72	nw.
Hatteras, N. C.	15	60	nw.	Do	12	56	nw.
Jupiter, Fla	11	78	ne.	Point Reyes Light, Cal.	6	58	nw.
Do	12	60	e.	Do	7	57	nw.
Kittyhawk, N. C	15	72	ne.	Do	11	61	nw.
Modena, Utah	5	60	sw.	Do	12	75	nw.
Moorhead, Minn	12	51	sw.	Do	13	53	nw.
Mount Tamalpais, Cal	3	50	nw.	Do	23	57	nw.
Do	4	58	w.	Southeast Farallon, Cal.	12	58	nw.
Do	5	56	nw.	Do	13	56	nw.
Do	6	53	nw.	Tatoosh Island, Wash.	24	66	s.

DESCRIPTION OF TABLES AND CHARTS.

By Mr. W. B. STOCKMAN, Forecast Official, in charge of Division of Meteorological Records.

For description of tables and charts see page 286 of REVIEW for June, 1903.